

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Katsumi MIYATA et al.

Serial Number: 09/478,508

Filed: January 6, 2000

For: SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME



Group Art Unit: 2814

Examiner: GRAYBILL, D.

81A  
10-11-00  
Bilal

AMENDMENT

Director of Patents and Trademarks  
Washington, D.C. 20231

October 6, 2000

Dear Sir:

This is in response to the Office Action dated July 14, 2000, having a shortened three-month period for response ending on October 14, 2000. The following amendments and remarks are respectfully submitted.

IN THE CLAIMS:

Please **CANCEL** claims 1-12, 14 and 15 without prejudice or disclaimer.

Please **AMEND** claim 13 as follows:

RECEIVED  
OCT 10 2000  
TC 2000 MAIL ROOM

13. (Amended) A semiconductor device having a semiconductor chip,  
first electrodes formed on said semiconductor chip,  
barrier metals formed on said first electrodes and having laminated structures, and

a'  
2  
sul  
3 B,

4 a plurality of second protruded electrodes, which [serves] serve as external connection  
5 terminals, formed on said barrier metals, wherein said barrier [metal] metals comprising:

6 a lowermost conductive metal layer laminated on said first electrodes [and made  
7 of one or more], said lowermost conductive metal [coating] layer having a comparatively good  
8 joining property with said first electrodes;

9 an intermediate conductive metal layer laminated on said lowermost conductive  
10 metal layer [and made of one or more], said intermediate conductive metal layer comprising one  
11 or more layers and having a comparatively good joining property with said lowermost conductive  
12 metal layer, [at least one of] said intermediate conductive metal [layers] layer having at least one  
13 layer serving as a barrier layer for preventing said protruded electrodes from [diffused] diffusing  
14 into said intermediate conductive metal [layers] layer; and

15 an uppermost conductive metal layer laminated on said one or more intermediate  
16 conductive metal layers [and made of one or more], said uppermost conductive metal [layers]  
17 layer being made of a material which easily alloys with the material of said [plurality of the  
18 uppermost] intermediate conductive metal layers.

### REMARKS

Claim 13 is pending in this application. Claims 1-12, 14 and 15 have been cancelled.  
Reconsideration of the rejections in view of these amendments and the following remarks is  
respectfully requested.

**Rejections under 35 USC §112, Second Paragraph**

Claim 13 was rejected under 35 USC 112, second paragraph, as being indefinite because claim 13 lacks sufficient literal antecedent basis.

Claim 13 has been amended to give sufficient antecedent basis and clarify the claimed subject matter. Thus, the 35 USC 112, second paragraph rejection has been overcome.

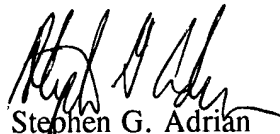
It is submitted that thus all pending claims are in condition for allowance. Reconsideration of the rejection, withdrawal of the rejection and an early issue of a Notice of Allowance are earnestly solicited.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. The fees for such an extension or any other fees which may be due with respect to this paper, may be charged to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, WESTERMAN, HATTORI,  
McLELAND & NAUGHTON



Stephen G. Adrian  
Attorney for Applicants  
Reg. No. 32,878

Atty. Docket No. 991527  
1725 K Street, N.W., Suite 1000  
Washington, DC 20006  
Tel: (202) 659-2930  
Fax: (202) 887-0357  
SGA/SK/fs H:\HOME\fsakai\amendment\991527